DOCUMENT RESUME

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IDENTIFIERS *Oregon

ABSTRACT

Curriculum mapping activities can be useful in analyzing curriculum goals and planning curriculum revision. This document is specifically designed using the Science Education Curriculum Goals articulated by the State of Oregon for grade 5. The goal areas include concepts, processing, manipulative skills, interests, values, interactions and characteristics. Information gathered using this document include: (1) amount of instruction; (2) degree to which instruction is included in course goals; (3) adequacy of texts and supplementary materials; and (4) adequacy of teacher training for each goal. The instrument is organized as a grid. (CW)

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USE OF THIS DOCUMENT

This document is provided for your convenience. Curriculum mapping is not a required activity. However, you will find that information obtained in this process will be helpful in analyzing your current curriculum in terms of the Science Education Common Curriculum Goals and planning for curriculum revision.

INSTRUCTIONS

Use of this document to gather information

1. Decide on questions to be asked. Some questions are provided in the column headings. You may wish to add or delete column headings.

2. Items underlined are unique to the Science Education Common Curriculum Goals or indicate that a change has occurred in the wording of an Essential Learning Skill.

3. Determine who will respond to the survey and under what conditions.

4. Reproduce the document and provide staff orientation and training.

5. Clarify intent of column headings and numeric scores.

Amount of Instruction:

Considerations here include amount of time and quality of instruction and feedback provided to students on the skill. Practice or application by instruction.

Included in Course Goals:

To be considered here is the degree to which the current local course goals reflect a particular common curriculum goal.

Adequate Materials:

Considerations here include the quality and the quantity of instructional equipment and apparatus. Also, the quality and quantity of teacher resources available for teachers planning. Concerns about sufficient materials for each student or teacher should be reflected in the comment section and in the score.

Ratings: 0 = absence or a complete lack of the item specified in the column heading.
1 = a low or inadequate amount or quality of the specified item.
2 = a moderate or reasonably satisfactory amount or quality of the specified item.
3 = a high or substantial amount or quality of the specified item.

Adequate Teacher Training:

Considerations here include teacher preservice, inservice, college courses, workshops, personal reading and experiences which provice the teacher with the necessary skills to teach toward the specified goals.

Blank Column:

This column is provided for questions that you would like to add.

Comments:

Encourage teachers to use this section to clarify their ratings or express related concerns.

Use of this document to tally results

Results can be tallied in the space provided above numeric scores on an unmarked form. Consideration should be given to tallying by grade level or course title.

Use of this document to analyze results

An additional unmarked document can be used to display results across grades or courses for analysis and decision-making. Data could be displayed in a numeric average, as a compilation of all ratings, with a word descriptor (such as low, medium, high), or symbolically, using color coding.

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SCHOOL: _____

ASSIGNMENT: 6 ___ 8 ___ 7 ___ Course _____ End of Fifth Grade	Amount of Instruction	Included in Course Goals	Adequate Materials: Basal Text	Adequate Materials: Supplementary	Adequate Teacher Training		COMMENTS
1.0 Concepts. Students apply an understanding of fundamental concepts on which science is based.							
STUDENTS WILL BE ABLE TO:							
1.1 Demonstrate CAUSE AND EFFECT: Related series of two or more events that lead one to believe that nature is predictable (e.g., acid rain affecting plant growth, changing the temperature of a material, chemical reactions)*							
a State a hypothesis using a cause and effect relationship	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
b Identify the relationship between a cause and an effect	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
1.2 Demonstrate CHANGE: The process of things becoming different over time (e.g., aging, growth, metamorphosis, fire, mountains breaking up) (ELS 6.1)**							
a Give examples of different rates of change	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
b Explain how things continue to have some of the same characteristics even though a major change occurs	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	

0 = absence 2 = moderate
1 = low 3 = high
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End of Fifth Grade	Amount of Instruction	Included in Course Goals	Adequate Materials: Basal Text	Adequate Materials: Supplementary	Adequate Teacher Training		COMMENTS
1.3 Demonstrate CYCLE: A pattern in which events or conditions repeat at regular or irregular intervals (e.g., day and night, seasons, reproductive cycles, nitrogen and carbon cycles)							
b Arrange parts of cycles	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
c Identify oscillation in a cycle	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
1.4 Demonstrate ENERGY-MATTER: Mutually convertible equivalents ("stuff") from which the universe is made. Matter contains energy in many forms (e.g., states of matter are determined by energy in motion, nuclear energy comes from the nucleus when atoms split or fuse)							
a Recognize the release of energy from matter (e.g., burning)	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
b Recognize the converting of one energy form to another (e.g., mechanical rotation for transforming electricity)	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
1.5 Demonstrate ORGANISM: A system living or once living characterized by the processes of life (e.g., plants and animals; unicellular/bacteria)							

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End of Fifth Grade	Amount of Instruction	Included in Course Goals	Adequate Materials: Basal Text	Adequate Materials: Supplementary	Adequate Teacher Training		COMMENTS
[a] Identify the major life process (e.g., digestion, locomotion, respiration, reproduction) that occur in an organism	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
1.6 Demonstrate POPULATION: A group of structural or functional units that have specific or common characteristics (e.g., organisms)							
[a] Identify and describe a population	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
1.7 Demonstrate EQUILIBRIUM: A state of balance of equality between opposing forces (e.g., seesaw, diffusion of molecules from high to low concentration) after rates reach a balanced state							
[a] Define and demonstrate balance	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
1.8 Demonstrate EVOLUTION: A series of changes that can be used to explain how something has become the way it is or to predict what it might become (e.g., simple animal and plant forms to more complex forms)							
[a] Recognize that evolution is the process of change over time	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	

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End of Fifth Grade	Amount of Instruction	Included in Course Goals	Adequate Materials: Basal Text	Adequate Materials: Supplementary	Adequate Teacher Training		COMMENTS
[b] Identify adaptations of plant and animal parts	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
1.9 Demonstrate FORCE: A push or pull against resistance which causes action, inaction or change (e.g., catapult, gravity, change the speed or direction of motion, stop motion)							
[a] Identify and change forces on an object	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
1.10 Demonstrate FUNDAMENTAL ENTITIES: Units of structure and function useful in explaining phenomena (e.g., organism in populations, methods of measurements)							
[a] Recognize basic units that make up objects and systems	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
1.11 Demonstrate INTERACTION: Two or more things influencing each other (e.g., population/food, hot/cold, acid/base, force/movement, volume/pressure)							
[a] Recognize interactions by noting the object or condition that causes a change	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	

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End of Fifth Grade	Amount of Instruction	Included in Course Goals	Adequate Materials: Basal Text	Adequate Materials: Supplementary	Adequate Teacher Training		COMMENTS
1.12 Demonstrate ORDER: The tenet that there is order in nature or that order can be described in the various schemes or patterns of nature (e.g., periodic table, tides, sunrise/sunset)							
[a] Give examples of systems used to order objects or events (e.g., food chains)	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
1.13 Demonstrate QUANTIFICATION: A number and unit resulting from a measurement of some real or abstract thing, situation or event (e.g., distance, time, mass, metric system (meter/second/gram), density, solubility, probability)							
[a] Collect and record data using appropriate units of measurement	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
1.14 Demonstrate SYSTEM: A set of parts that function together as a whole. The parts can be discussed or studied individually for more effective learning (e.g., parts of a flower, digestive system of the body, electric motors)							
[a] Recognize and diagram the parts of a system	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	

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1.15 Demonstrate THEORY: A plausible or scientifically acceptable explanation made up of models, concepts, and principles of some observed thing, phenomenon or thought (e.g., development of earth, atom, universe)							
[a] Define a theory	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
1.16 Demonstrate FIELD: A region around something that influences some other thing often without touching (e.g., magnetic, electrical, gravitational)							
1.17 Demonstrate GRADIENT: A situation in which the intensity of something increases or decreases in a more or less regular pattern (e.g., temperature changes as distance from heat source is varied, stream flow, light intensity changes as distance from light source is varied)							
1.18 Demonstrate INVARIANCE: A characteristic of an object or a situation which stays constant even though other characteristics may change (e.g., number of protons in nucleus, life (time related), total mass in chemical reaction)							

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1.19 Demonstrate MODEL: Proposed idea of the composition and relationships present in something that cannot be observed directly (e.g., black box, black hole)							
[a] Recognize what a model is and why it is used (e.g., solar system)	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
1.20 Demonstrate PERCEPTION: The mind's interpretation of sensory input (e.g., illusions, use of sensory limitations to extend perception of scientific equipment)							
1.21 Demonstrate PROBABILITY: An expression of the likelihood that a situation or event will occur (e.g., flipping coins for heads or tails, cards, numbers, genetics, types of organisms, earthquakes, electron orbits)							
[a] Explain how a number of data points influence probability	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
1.22 Demonstrate REPLICATION: Repeating the same condition in expectation that the same results will be produced (e.g., same soil condition produces same size plant, same ingredients in same product)							
[a] Repeat a simple experiment	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	

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1.23 Demonstrate SCALE: The understanding that characteristics may change as a system's dimensions are increased or decreased (e.g., maps, globes, models of cars or planets, or houses)							
a Demonstrate proportion as an actual scaled size	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
b Design a map drawing it to scale	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
1.24 Demonstrate SYMMETRY: Structurally balanced (e.g., snowflakes, airplane body, right and left side of human body, sphere)							
a Demonstrate bilateral and radial summetry	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
b Identify examples of symmetry found in the environment	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
1.25 Demonstrate TIME-SPACE: The timing of an event moving from point A to point B (e.g., mph or km/h, automobiles separated by space of 3 seconds, velocity or vector, speed of nerve impulse)							
a Demonstrate comprehension of the concept of movement	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	

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2.0 Processes. Students apply problem solving and inquiry processes. STUDENTS WILL BE ABLE TO:							
2.1 OBSERVE: Make accurate observations of objects and events using the senses or instruments to aid the senses* (ELS 4.1)**							
a Describe changes observed in an object or event (e.g., metamorphosis of a Monarch butterfly, freezing water in a closed container)	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
b Use instruments to enhance qualitative and quantitative observations of change within an object or an event (e.g., thermometer, camera, videotape, balance, computer)	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
2.2 MEASURE: Use measuring devices to collect data (ELS 1.7)							
a Select and use the appropriate instrument for measurement in metric and English (U.S. Customary) units	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
b Measure and record the properties, (e.g., length, weight, mass, volume, temperature, time) of an object or event	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	

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2.3 USE NUMBERS: Use number/numeric figures, letters, words, symbols and visuals to count, compute and communicate quantitative data (ELS 1.4)							
[a] Use mental, manual, or calculator processes to perform grade-level arithmetic operations in reporting scientific information and conducting scientific investigations	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
[b] Interpret and construct tables and charts of scientific data (ELS 1.6)	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
2.4 RELATE TIME-SPACE: Describe spatial relationships and their change with time (ELS 1.6)							
2.5 INFER: Recognize, construct and draw inferences concerning relationships among things and ideas (ELS 6.1)							
[a] Use a list of observations of an object or event (e.g., a spider building a web) to make an inference about the reason for or the function of the object or event	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
2.6 CLASSIFY: Use the characteristics of objects or events to group them by ordering similarities (ELS 6.1)							

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End of Fifth Grade	Amount of Instruction	Included in Course Goals	Adequate Materials: Basal Text	Adequate Materials: Supplementary	Adequate Teacher Training		COMMENTS
[a] Classify objects according to specific characteristics	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
[b] Sequence (seriate) objects using one variable (ELS 1.6)	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
2.7 DEFINE OPERATIONALLY: Use the common characteristics of sets of objects or events observed or experienced to develop definitions of those objects or events							
[a] Develop a definition for a set from observations of members of the set (e.g., dogs)	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
2.8 QUESTION: Identify problems and develop testable questions relating to the problems (ELS 6.3)							
[a] Recognize information needed to solve a given problem	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
[b] Develop questions designed to clarify a given problem (ELS 2.3)	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
[c] Use data from the questioning process to develop a problem-solving plan	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	

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2.9 HYPOTHESIZE: Use information and questions to generate statements that describe expected results of investigation (ELS 6.2)							
2.10 DESIGN EXPERIMENTS: Plan and conduct data gathering operations to test hypotheses or answer questions (ELS 6.3)							
a Follow directions to conduct an experiment and identify the hypothesis used	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
b Solve problems using a variety of strategies such as guessing and checking, making predictions based upon a pattern, making a drawing or model	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
c Engage in cooperative problem solving and compare alternative solution strategies	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
d Use formative (in process) data to modify or confirm problem-solving plan	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
2.11 CONTROL VARIABLES: Identify and manage factors that may influence an experiment (ELS 3.1)							
a Identify factors that may influence the outcome of an investigation	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	

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b Draw logical conclusions from information presented	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
2.12 INTERPRET DATA: Find patterns or meanings in experimental results (ELS 3.1, 6.2, and 6.4)							
a Inspect data tables or charts to find systematic changes in a variable	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
b Evaluate whether a simple written or oral inference is consisten with known data (ELS 6.4)	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
c Draw logical conclusions from information presented (ELS 3.1)	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
2.13 PREDICT: Use information and data to generate and test predictions (ELS 1.6 and 6.2)							
a Make predictions based on the systematic changes found in a data table or chart (e.g., use the chart to predict the time a burning candle would be extinguished in a closed container) (ELS 1.6)	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
2.14 FORMULATE MODELS: Use problem solving and questioning skills to develop mental models that explain phenomena (ELS 6.3)							

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2.15 COMMUNICATE: Use a variety of techniques to share the results of investigations (ELS 1.6 and 2.3)							
[a] Share information about investigations by applying oral, written and visual (e.g., graphs) communication skills (ELS 1.6 and 2.3)	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	

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3.0 Manipulative Skills. Students use a variety of materials and equipment in a safe and scientific way. STUDENTS WILL BE ABLE TO:							
3.1 CONSTRUCT: Set up, shape or build the equipment and apparatus necessary for scientific activities (e.g., grid squares, microscope slides, glassware)*							
a Select and assemble materials (e.g., bird houses, feeders, insect displays, rearing chambers, models)	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
3.2 HANDLE MATERIALS: Demonstrate the proper safe use and maintenance of laboratory equipment and materials (e.g., pointed scissors, safety glasses, microscopes, chemicals, power tools, living materials, models, measuring devices)							
a Develop an awareness of handling and disposal of hazardous materials and equipment	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
b Develop rules establishing safe hands-on experimental practices	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
3.3 PRACTICE BEHAVIOR: Practice appropriate and positive health behaviors to enhance learning (ELS 7.4)**							

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End of Fifth Grade	Amount of Instruction	Included in Course Goals	Adequate Materials		Adequate Teacher Training		COMMENTS
			Basal Text	Supplementary			
[a] Explain how substance use can produce healthful or harmful effects on mental and physical performance (e.g., gathering data during an investigation)	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	

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4.0 Interests. Students develop interest in science.							
STUDENTS WILL BE ABLE TO:							
4.1 Develop vocational and avocational interests in science by using many sources (e.g., media, organizations, conducting own research activity in and beyond the classroom)* (ELS 7.2)**							
a Locate and use reference materials (e.g., books, periodicals, newspaper, observations of nature, television, museums, exhibits, personal interviews, computer accessed data bases)	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
b Use library classification system and services to locate specialized resources	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
c Describe several science vocations and avocations	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
4.2 Recognize words and symbols commonly used in written materials (ELS 1.1)							
a Recognize common words and symbols found in written materials	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	

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4.3 Determine meaning of unknown words and symbols commonly used in instructional materials (ELS 1.2)							
[a] Use concrete (hands-on) experiences as a basis for determining meaning of terms	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
[b] Use dictionaries, glossaries, media, and other reference materials to find word and symbol meanings	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
4.4 Use instructional materials as basis for gaining knowledge and improving comprehension (ELS 2.2)							
[a] Use table of contents and index to locate general and specific information	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
[b] Use supportive illustrations, detail and summations to obtain information	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
[c] Use current technology (e.g., video tape, computer accessed data bases, video disc) to locate information needed	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	

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5.0 Values. Students apply the values that underlie science.							
STUDENTS WILL BE ABLE TO:							
5.1 Recognize that seeking knowledge and understanding is a worthy investment of time and resources* (ELS 6.2 and 6.3)**							
a Evaluate new information	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
b Evaluate personal knowledge and knowledge of others	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
5.2 Question information and ideas by determining their significance and accuracy as presented in written, oral, aural and visual communications (e.g., listening, reading, viewing, evaluating presentations of mass media) (ELS 4.4 and 6.4)							
a Distinguish between relevant and irrelevant information used to draw conclusions	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
b Determine a strategy for determining whether a statement is a fact (ELS 6.4)	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
c Evaluate whether a simple written or oral conclusion is consistent with known facts	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	

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1 = low 3 = high
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End of Fifth Grade	Amount of Instruction	Included in Course Goals	Adequate Materials: Basal Text	Adequate Materials: Supplementary	Adequate Teacher Training		COMMENTS
5.3 Recognize the importance of systematically acquiring and ordering data as the basis for scientific explanations and theories (ELS 6.4)							
[a] Recognize the relationship between the data acquired and scientific explanation or theory (e.g., give examples of real data which support an explanation or theory)	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
5.4 Recognize that scientific explanations must be replicable (e.g., supporting evidence obtained by other investigators working in differnt places at different times under similar conditions) and made public in order to be accepted as valid (ELS 5.3)							
[a] Use data collected from other students to verify their own results in an investigation	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
5.5 Apply logic by reflecting upon and improving own reasoning (ELS 6.6)							
[a] Describe the reasoning process most frequently being used in terms of inductive or deductive reasoning	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
[b] State rationale for people having biases	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	

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End of Fifth Grade	Amount of Instruction	Included in Course Goals	Adequate Materials: Basal Text	Adequate Materials: Supplementary	Adequate Teacher Training		COMMENTS
[c] Identify authoritative sources for obtaining feedback about reasoning skills	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
5.6 Recognize the importance of considering the consequences (e.g., possible, actual) of investigations and actions before deciding to continue, change, or stop the process							
[a] Recognize consequences of own personal choices	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	

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End of Fifth Grade	Amount of Instruction	Included in Course Goals	Adequate Materials: Basal Text	Adequate Materials: Supplementary	Adequate Teacher Training		COMMENTS
6.0 Interactions. Students describe interactions among science, society, technology and earth's environment.							
STUDENTS WILL BE ABLE TO:							
6.1 Describe how society influences science and technology*							
a Identify technology which has been developed or improved because people wanted it (e.g., styrofoam cups)	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
b Identify technology which has been developed or improved to help people (e.g., kidney dialysis machine)	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
6.2 Describe how science and technology influence society							
a Recognize how individual wants and needs are positively and negatively influenced by scientific knowledge	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
b Recognize how individual wants and needs are influenced by technology	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
6.3 Recognize the limitations as well as the usefulness of science and technology in advancing human welfare							
a Recognize that all consequences of science cannot be anticipated	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	

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End of Fifth Grade	Amount of Instruction	Included in Course Goals	Adequate Materials: Basal Text	Adequate Materials: Supplementary	Adequate Teacher Training		COMMENTS
6.4 Describe and predict the effects of science, society and technology on the earth's environment and its ability to support all forms of life							
[a] Describe how specific scientific and technological advances have affected the earth's environment and its ability to support life (e.g., sewage treatment plants, automobile exhaust, pesticides)	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
6.5 Evaluate the explanations by scientists, needs of society and possible impacts on the earth's environment to make responsible personal decisions regarding the uses of technology (ELS 6.4 and 6.5)**							
[c] State personal criteria for deciding whether to engage in or support a particular activity (ELS 6.4)	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	

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End of Fifth Grade	Amount of Instruction	Included in Course Goals	Adequate Materials: Basal Text	Adequate Materials: Supplementary	Adequate Teacher Training		COMMENTS
7.0 Characteristics. Students describe the characteristics of scientific knowledge.							
STUDENTS WILL BE ABLE TO:							
7.1 Describe the tentativeness of scientific knowledge (i.e., notion that it is subject to change, not truth in an absolute and final sense)*							
a Identify examples of historic changes in scientific knowledge	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
b Develop an awareness that science is not absolute	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
7.2 Explain the importance of objectivity and subjectivity in scientific thought, including similarity of conclusions reached by different individuals from the same information							
a State conclusions from experimental data	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
7.3 Analyze scientific predictions and explanations for their probability (i.e., science permits reasonable but not certain predictions and explanations)							

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